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EXAMINER

ZEC, FILIP

ART UNIT

PAPER NUMBER

3744

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/583,602	Applicant(s) CHOI ET AL.	
	Examiner Filip Zec	Art Unit 3744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 October 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-45 is/are pending in the application.
- 4a) Of the above claim(s) 23, 24, 27-33 and 39-45 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22, 25, 26 and 34-38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>6/20/06 and 11/02/07</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election of 1-22, 25, 26 and 34-38 in the reply filed on 10/30/2009 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Specification

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: A Refrigerator having a Specific Cool Air Distribution with respect to the Created Vortices at Respective Air Outlets.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 16 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 16, line 1, the applicant recites the limitation "the opening is configured to discharge the generated cool air to the freezing chamber and the refrigerating chamber". It is unclear whether said opening is discharging the air to both the freezing and the refrigerating chamber since the specification and the drawings suggest multiple openings (21 and 22, FIG. 2 of present specification) discharging the air. The limitation is interpreted to read "the opening is

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configured to discharge the generated cool air to the freezing chamber or to the refrigerating chamber”.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-4, 7-12, 15-18, 25, 26, 34, 35 and 38 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 6,009,720 to Ji et al. (Ji).

In reference to claim 1, Ji discloses a refrigerator comprising a refrigerator body (1, FIG. 4); a refrigerating chamber (3, FIG. 4) and a freezing chamber (special fresh chamber 18, FIG. 5; since the special fresh chamber stores food at a specific temperature range, it is capable of providing said range to be lower than in the refrigerating chamber; col 5, lines 52-56) provided in the body, for taking storage of foods; a cool air-generating device (composed of evaporator 12b and fan 13b, FIG. 4); a cool air-supplying device (21 and 30, FIG. 6) including at least one opening (space between the bottom of wall 23 and bottom of duct member 21, FIG. 6, hosting the lower part of motor 35, FIG. 7) for discharging the cool air and for circulating the cool air through the freezing chamber, the refrigerating chamber, and the cool generating device, and a separator (dispersing blades 33 and bars 37, FIG. 9) provided adjacent to the opening for uniformly diffusing the cool air in the freezing chamber and the refrigerating chamber, by separating the cool air into at least two passages (to the left and to the right of 33, FIG. 6).

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In reference to claim 2, Ji discloses the refrigerator as explained in the rejection of claim 1, and Ji also teaches that the separator is provided to block the discharged cool air (FIG. 10).

In reference to claim 3, Ji discloses the refrigerator as explained in the rejection of claim 1, and Ji also teaches that the separator (33, FIG. 7) is extended in perpendicular to a flowing direction of the cool air (in direction of bar 31, FIG. 7).

In reference to claim 4, Ji discloses the refrigerator as explained in the rejection of claim 1, and Ji also teaches that the separator oscillates the discharged cool air (varies the direction 33, FIG. 8-11).

In reference to claim 7, Ji discloses the refrigerator as explained in the rejection of claim 1, and Ji also teaches that the separator (33, FIG. 7) is configured to allow the separated passages of the cool air to collide with each other before discharging the cool air (past the point of airflow of space occupied by connecting bar 37, FIG. 7).

In reference to claim 8, Ji discloses the refrigerator as explained in the rejection of claim 1, and Ji also teaches that the separated passages of the cool air collide with each other in a straight line (inherent; collision is constrained and directed by left and right blades 33, FIG. 7).

In reference to claim 9, Ji discloses the refrigerator as explained in the rejection of claim 1, and Ji also teaches that the separated passages of the cool air collide with each other at a predetermined angle (inherent since the airflow is impacting the separator blades at a predetermined angle of 90°).

In reference to claim 10, Ji discloses the refrigerator as explained in the rejection of claim 1, and Ji also teaches that two opposite passages (inside of duct 15, FIG. 6, to the left and to the right of blades 33) are formed between the separator (33, FIG. 7) and the opening (between the

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bottom of wall 23 and bottom of duct member 21, FIG. 4, hosting the lower part of motor 35, FIG. 7), and the separated cool air flows along the two opposite passages.

In reference to claim 11, Ji discloses the refrigerator as explained in the rejection of claim 1, and Ji also teaches that the opening (between the bottom of wall 23 and bottom of duct member 21, FIG. 6, hosting the lower part of motor 35, FIG. 7) is positioned adjacent to a crossing point of meeting (at space below bar 37, FIG. 7) the separated passages of the cool air.

In reference to claim 12, Ji discloses the refrigerator as explained in the rejection of claim 1, and Ji also teaches that an interval between the separator and the opening (distance between the top of two blades 33, FIG. 6 and the bottom of duct 21, FIG. 6) is equivalent to (or smaller than) a width of the opening (distance between the lower end of duct 21 and wall 23, FIG. 6).

In reference to claim 15, Ji discloses the refrigerator as explained in the rejection of claim 1, and Ji also teaches that the cool air-supplying device includes at least one duct (15, FIG. 10) for supplying the cool air to the opening (16, FIG. 10).

In reference to claim 16, Ji discloses the refrigerator as explained in the rejection of claim 1, and Ji also teaches that the opening (space between the bottom of duct 21 and wall 23, FIG. 6) is configured to discharge the generated cool air to the freezing chamber (18, FIG. 5) or the refrigerating chamber (3, FIG. 5).

In reference to claim 17, Ji discloses the refrigerator as explained in the rejection of claim 1, and Ji also teaches that the opening (space between the bottom of duct 21 and wall 23, FIG. 6) is configured to discharge the generated cool air to the freezing chamber or the refrigerating chamber in at least two different directions (via inlets 16, FIG. 5 and 8-11).

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In reference to claim 18, Ji discloses the refrigerator as explained in the rejection of claim 1, and Ji also teaches that the opening (space between the bottom of duct 21 and wall 23, FIG. 6) is configured (via inlets 16, FIG. 5) to discharge the generated cool air to the freezing chamber or the refrigerating chamber (3, FIG. 5), the generated cool air discharged in perpendicular (FIG. 8).

In reference to claim 25, Ji discloses the refrigerator as explained in the rejection of claim 1, and Ji also teaches that the opening (bottom of 40, FIG. 1) is configured to discharge the cool air circulated in the freezing chamber (20, FIG. 1) and the refrigerating chamber (22, FIG. 1) to the cool air-generating device (27, FIG. 1; col 4, lines 26-32).

In reference to claim 26, Ji discloses the refrigerator as explained in the rejection of claim 1, and Ji also teaches that the opening discharges the cool air circulated in the freezing chamber and the refrigerating chamber to an evaporator of the cool air-generating device (col 4, lines 26-32).

In reference to claim 34, Ji discloses the refrigerator as explained in the rejection of claim 15, and Ji also teaches that the duct (15, FIG. 5) is expanded (with respect to the opening, as defined in the rejection of claim 1 above) toward the inside of the refrigerating chamber (3, FIG. 5) and/or the freezing chamber (18, FIG. 5).

In reference to claim 35, Ji discloses the refrigerator as explained in the rejection of claim 15, and Ji also teaches that the duct (15, FIG. 6) has an expanded portion (between wall 9 and separator blades 33, FIG. 6) adjacent to the separator.

In reference to claim 38, Ji discloses the refrigerator as explained in the rejection of claim 15, and Ji also teaches that the duct (15, FIG. 6) is gradually expanded (tapered round shape towards the outlet 16, FIG. 7).

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7. Claims 1 and 19-22 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 4,920,758 to Janke et al. (Janke).

In reference to claim 1, Janke discloses a refrigerator comprising a refrigerator body (10, FIG. 1); a refrigerating chamber (22, FIG. 1) and a freezing chamber (20, FIG. 1) provided in the body, for taking storage of foods; a cool air-generating device (27, FIG. 1); a cool air-supplying device (40, FIG. 1) including at least one opening (bottom and top of elongated tube 40, FIG. 1) for discharging the cool air and for circulating the cool air through the freezing chamber, the refrigerating chamber, and the cool generating device, and a separator (47, FIG. 1) provided adjacent to the opening for uniformly diffusing the cool air in the freezing chamber and the refrigerating chamber, by separating the cool air into at least two passages (to the left and to the right of 47, FIG. 1, towards both chambers 20 and 22).

In reference to claim 19, Janke discloses the refrigerator as explained in the rejection of claim 1, and Janke also teaches that the opening (bottom and top of tube 40, FIG. 1) includes first inlets (38, FIG. 1) provided to a top wall of the refrigerating chamber (top of chamber 22, FIG. 1) and the freezing chamber (20, FIG. 1), to discharge the cool air toward a lower side (upper part of 14, FIG. 1); and second inlets (44 and 46, FIG. 1) provided to an upper sidewall of the refrigerating chamber and the freezing chamber, to discharge the cool air toward an opposite sidewall (lower part of 14, FIG. 1).

In reference to claim 20, Janke discloses the refrigerator as explained in the rejection of claim 19, and Janke also teaches that the first (38, FIG. 1) and second (44 and 46, FIG. 1) inlets discharge the cool air at a perpendicular direction (inherent since there are not grilles or deflectors depicted, FIG. 1-6).

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In reference to claim 21, Janke discloses the refrigerator as explained in the rejection of claim 19, and Janke also teaches that opening includes at least one outlet (44, FIG. 1) provided at a lower portion of the refrigerating chamber (22, FIG. 1) and the freezing chamber (20, FIG. 1), for discharging the cool air circulated in the freezing chamber and the refrigerating chamber.

In reference to claim 22, Janke discloses the refrigerator as explained in the rejection of claim 21, and Janke also teaches that outlets (44 and 46, FIG. 1) are provided at lower portions of both sidewalls (18, FIG. 1) of the freezing chamber (20, FIG. 1) and the refrigerating chamber (22, FIG. 1).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ji in view of U.S. Patent 3,428,040 to Baker et al. (Baker).

In reference to claim 5, Ji discloses the refrigerator as explained in the rejection of claim 1, but does not teach that the separator generates at least two vortexes in opposite. Baker shows a conical member (52, FIG. 1) located towards the outlet of the pipe (37, FIG. 1) through which a flue gas is exhausted resulting inherently in vortices created at flange (49, FIG. 1) resulting in a satisfactory dispersion of the flue (col 3, lines 66-68) in order to eliminate or reduce the drawing of the flue gases back into the annular space (col 3, lines 68-70).

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Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Ji, to include the conical member, as taught by Baker, in order to eliminate or reduce the drawing of the flue gases back into the annular space.

In reference to claim 6, Ji and Baker disclose the refrigerator as explained in the rejection of claim 5, and Baker also teaches that the vortices have size and intensity being different and continuously changed (inherent, since it is a natural phenomenon and common in knowledge that after air flows past an object, the vortices produced in the downstream direction have different size and intensity which continuously changes).

10. Claims 13, 14, 36 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ji.

In reference to claims 13 and 14, Ji discloses the refrigerator as explained in the rejection of claim 1, but does not teach that an interval between the separator and the opening is about 0.5 times of a width of the opening (per claim 13) and that a width of the separator is equivalent to a width of the opening (per claim 14). However, it would have been obvious matter of design choice to modify the Ji reference by having the interval between the separator and the opening at about 0.5 times of a width of the opening and having the width of the separator equivalent to a width of the opening, since applicant has not disclosed that having said distances at these specific values solves any stated problem or is for any particular purpose and it appears that the system would perform equally well with the distances at any values as long as the interval between the separator and the opening (distance between the top of two blades 33, FIG. 6 and the bottom of duct 21, FIG. 6) is equivalent to (or smaller than) a width of the opening (distance between the lower end of duct 21 and wall 23, FIG. 6), as stipulated by claim 12 (rejected above).

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Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Ji, to have the interval between the separator and the opening about 0.5 times of a width of the opening and the width of the separator equivalent to a width of the opening in order to provide adequate dispersion of the cooled air inside of the refrigerating chamber.

In reference to claims 36 and 37, Ji discloses the refrigerator as explained in the rejection of claim 35, but does not teach that a width of the expanded portion is about 2 to 2.5 times of a width of the corresponding duct (per claim 36) and that a height of the expanded portion is about 1 to 1.2 times of a width of the corresponding duct (per claim 37). However, it would have been obvious matter of design choice to modify the Ji reference by varying the width and the height of the expanded portion of the duct, since applicant has not disclosed that having said dimensions at these specific values solves any stated problem or is for any particular purpose and it appears that the system would perform equally well with the distances at any values as long as the extended portion of the duct extends towards the refrigerator and/or freezer, as stipulated in the rejection of claim 34.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Ji, to have the width of the expanded portion about 2 to 2.5 times of a width of the corresponding duct and the height of the expanded portion about 1 to 1.2 times of a width of the corresponding duct in order to provide adequate dispersion of the cooled air inside of the refrigerating chamber.

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Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent Application Publication 2004/0261444 to Chastine teaches methods and apparatus for refrigerator compartment.

U.S. Patent 3,175,373 to Holkeboer et al. teaches combination trap and baffle for high vacuum systems.

U.S. Patent 6,053,162 to Godfree et al. teaches balanced flue sealed vent terminal assembly.

U.S. Patent 6,394,008 to Bauver, II et al. teaches splitter plate arrangement for a flue gas stack.

U.S. Patent 4,135,440 to Schmidt et al. teaches method and apparatus for ventilating or air conditioning occupied rooms.

U.S. Patent 5,368,072 to Cote teaches sliding gate terminal unit for air handling system.

U.S. Patent 5,778,694 to Jeong teaches cooling air supply control apparatus of refrigerator.

U.S. Patent 6,625,998 to Kim et al. teaches device for controlling cooling air supply of refrigerator.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Filip Zec whose telephone number is 571-270-5846. The examiner can normally be reached on Monday-Friday, from 8:30 AM - 5:00 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisors, Frantz Jules or Cheryl Tyler can be reached on 571-272-6681 or 571-272-4834, respectively. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Cheryl J. Tyler/
Supervisory Patent Examiner, Art Unit 3744

/F. Z./
Examiner, Art Unit 3744

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